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| 09/894,121 | 06/29/2001 | Tsuyoshi Kitahara | Q64938 | 6181 |

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SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC
2100 Pennsylvania Avenue, N.W.
Washington, DC 20037-3202

EXAMINER

TUGBANG, ANTHONY D

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

3729

DATE MAILED: 12/03/2003

9

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/894,121

Applicant(s)

KITAHARA, TSUYOSHI

Examiner

A. Dexter Tugbang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 September 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-19 and 21-29 is/are pending in the application.
- 4a) Of the above claim(s) 25-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14-19 and 21-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 09/394,706.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. The applicant's amendment filed 9/16/03 (Paper No. 8) has been fully considered and made of record.

Election/Restrictions

2. The applicant's amendment filed 9/16/03 has necessitated a restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 14-24, drawn to a process of making a piezoelectric vibrator unit by forming slits to elongate an area, classified in class 29, subclass 25.35.
- II. Claims 25-29, drawn to a process of making a piezoelectric vibrator unit by forming slits to produce divided conductor regions, classified in class 29, subclass 417.

The inventions are distinct, each from the other because of the following reasons:

3. Inventions of Groups I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, the invention of Group II has separate utility such as forming slits to avoid through holes and produce divided conductor regions each with segment internal electrodes and second regions having common electrodes. See MPEP § 806.05(d).
4. Because these inventions are distinct for the reasons given above and the search required for Group II is not required for Group I, restriction for examination purposes as indicated is proper.

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5. Newly submitted Claims 25-29 are directed to an invention that is independent or distinct from the invention originally claimed for the reasons set forth above.

Since applicant has received an action on the merits for the originally presented invention (i.e. Group I), this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, Claims 25-29 have been withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Specification

6. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: A Method of Manufacturing a Piezoelectric Vibrator Unit.

Claim Rejections - 35 USC § 103

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claims 14-19 and 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Applicants' Admitted Prior Art, referred to hereinafter as AAPA, in view of Kubota 5,644,107.

The AAPA (specification, pages 1-2) discloses at least the structure of a piezoelectric vibrator unit with alternately stacked piezoelectric ceramic material. The AAPA does not teach the manufacturing steps to arrive at the structure in the AAPA.

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Kubota teaches an electronic component manufacturing process comprising the following steps: preparing a green sheet 16 in which through holes 19 are opened in the vicinity of at least one end portion thereof; forming conductive material 12 on the green sheet while filling the through holes such that a strip-shaped non-conductive region is formed in an area which is nearer to a center portion of the green sheet than the through holes and is coincident with a distant end of an internal common electrode 23, 24; repeating the above steps to stack a required number of layers until the through holes to be electrically connected with a segment electrode are filled (see col. 5, lines 42+); baking the above to form a single material diaphragm (see col. 6, lines 43-49); and forming slits on the diaphragm so as to elongate to an area where the conductive layers can be separated (see col. 7, lines 66+).

Regarding Claims 16-17, Kubota shows that the through holes 19 are opened so as to coincide with an arrangement pitch of the piezoelectric vibrators (see Fig. 3).

Regarding Claims 18-19, Kubota shows that the slits are formed so as to coincide with an arrangement pitch of the through holes formed in one end portion thereof (again See Fig. 3).

Regarding Claims 21-22, the examiner has provided Attachment A of Kubota's Figure 2, which shows one set of through holes slightly offset from the other set of through holes such that the through holes of alternate layers, or all of the layers, are positioned in one line.

The advantage of the above manufacturing process of Kubota allows packing and handling to be easier with components that are separated from one another (see col. 4, lines 20-25).

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the structure of the AAPA by utilizing the manufacturing process of Kubota, to advantageously allow packing and handling to be much easier.

Regarding Claims 23-24, the through holes of Kubota appear to have a greater width than the thickness of the respective green sheet upon reviewing Figure 2. However, if applicants' do not believe that the width of the through holes is larger than the thickness of the respective green sheet, then it would have been an obvious matter of design choice to choose any desired width of the through holes since the applicant has not disclosed that the claimed relative width of the through holes solve any stated problem or is for any particular purpose and it appears that the invention would perform equally well with the width of the through holes taught by Kubota.

Response to Arguments

9. Applicant's arguments filed 9/8/03 (Paper No. 8) have been fully considered but they are not persuasive.

In regards to the merits of Kubota, the applicant contends that Kubota does not teach a strip-shaped non-conductive region forming on the green sheet in an area that is nearer to a center portion of the green sheet.

The examiner most respectfully traverses and for further clarification, has provided Attachment B illustrating what is being read as a "strip-shaped non-conductive region" in Kubota's Figure 3. The highlighted region (in yellow) shows a strip-shaped non-conductive region formed on the green sheet that is nearer to a center portion of the green sheet (red dashed line drawn by the examiner) than the through holes formed to the right of the highlighted region.

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It is noted that the phrases of "strip-shaped non-conductive region" in "an area" are very broad and relative phrases to describe the relationship of the non-conductive region with the through holes. So broad in fact, that the highlighted region selected by the examiner can satisfy the limitations of the relationship of the "strip-shaped non-conductive region" with the through holes and it appears that further limitations are needed to avoid Kubota.

In arguing Kubota individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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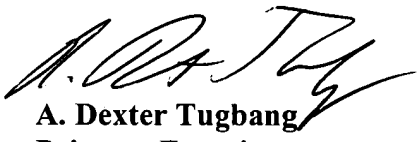
however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Dexter Tugbang whose telephone number is 703-308-7599.

The examiner can normally be reached on Monday - Friday 7:00 am - 3:30 pm.

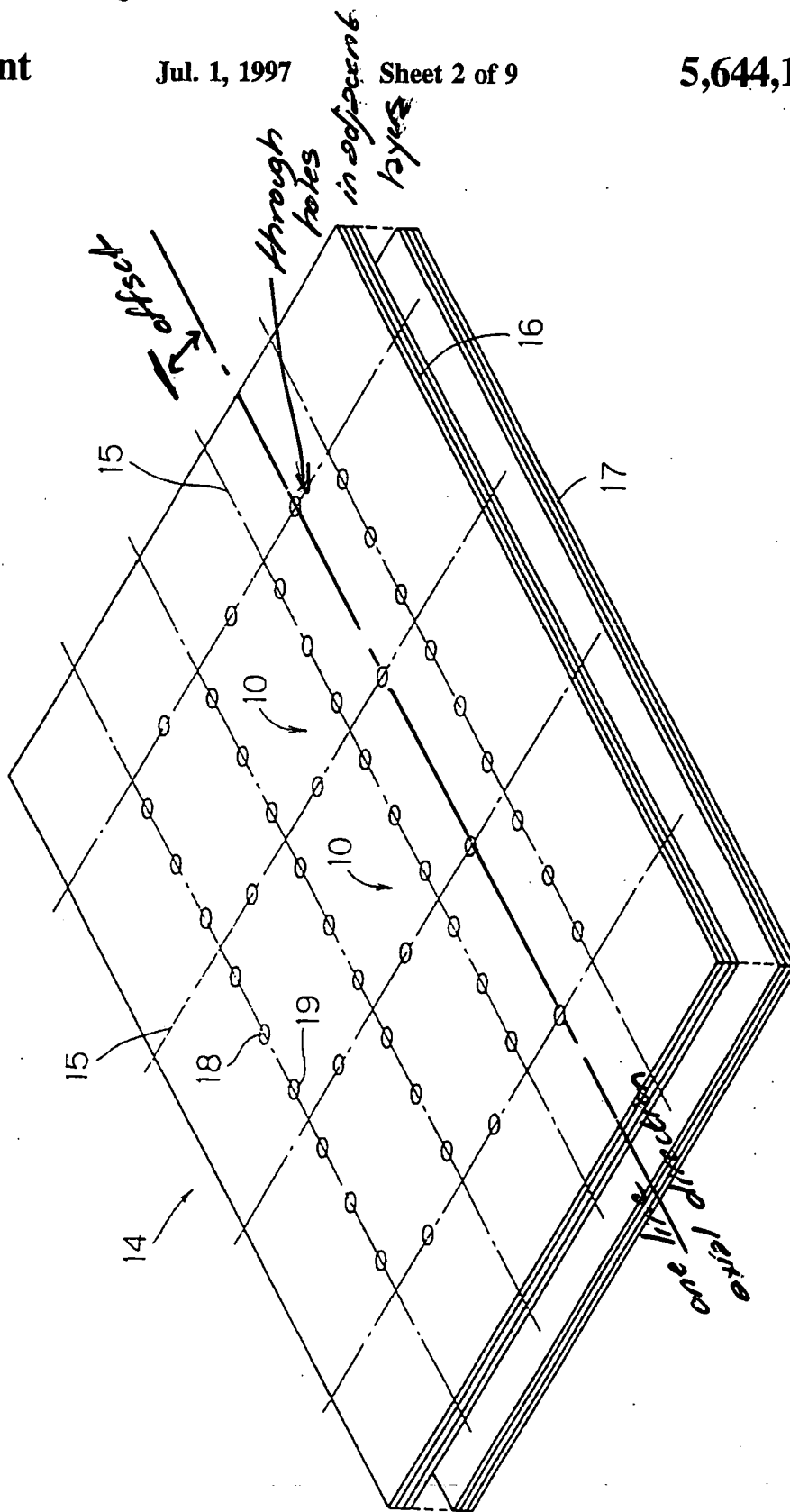
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 703-308-1789. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9302.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0858.


A. Dexter Tugbang
Primary Examiner
Art Unit 3729

December 1, 2003

FIG. 2



Attachment A

FIG. 3

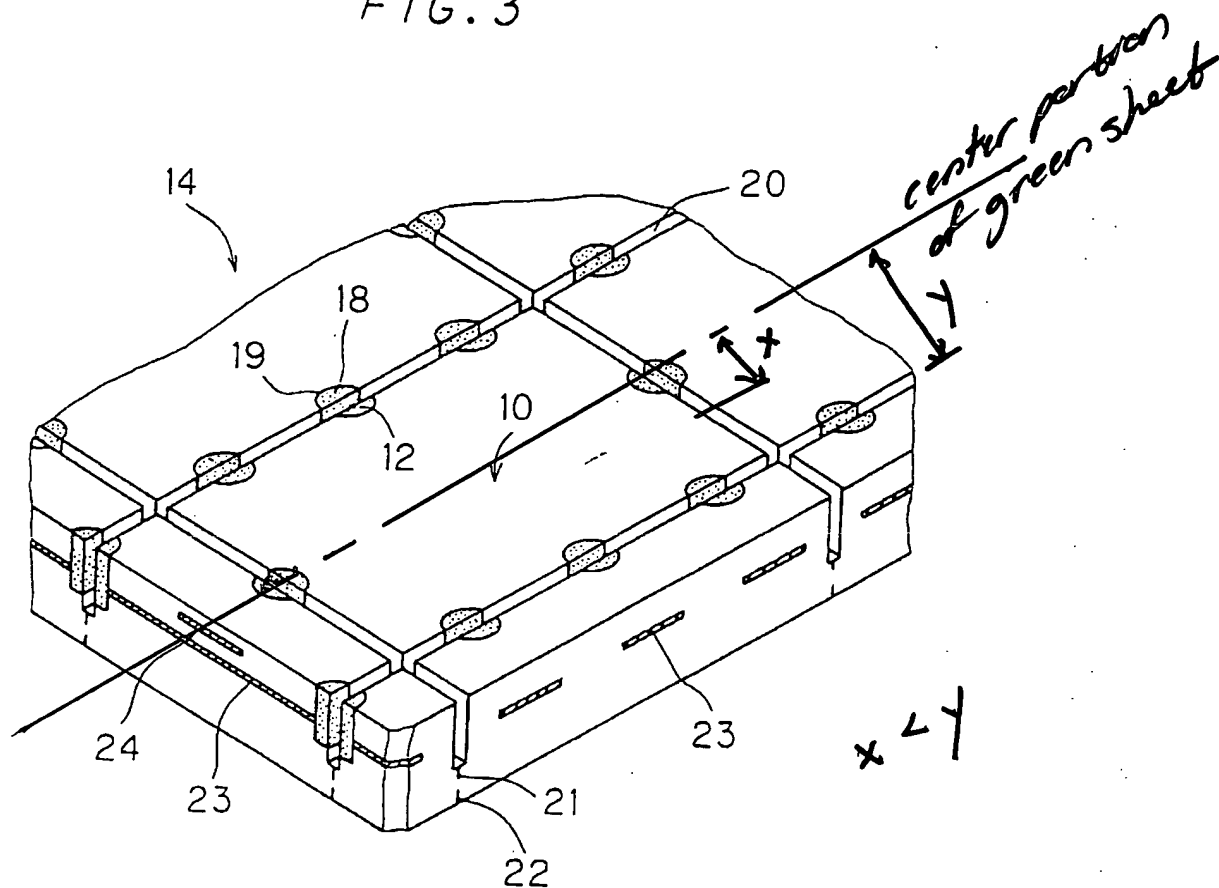
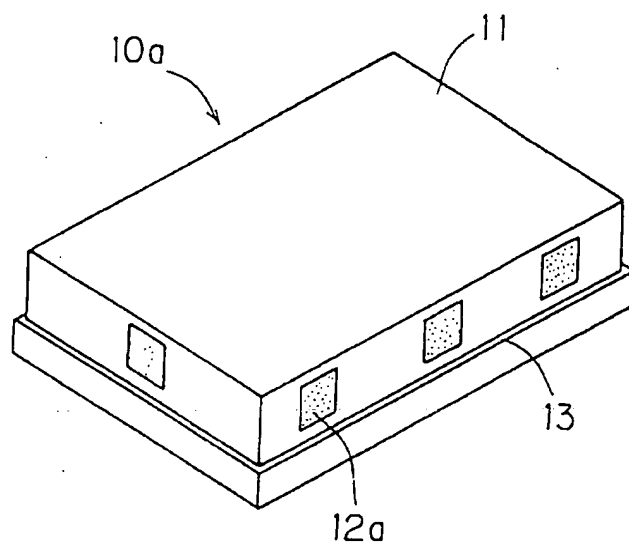


FIG. 4



Attachment B